

Declaration # 10  
G. Burns  
11/19/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE THE APPLICATION OF:

Inventor : Mitchell R. Swartz

Serial no. 09/ 750,765

Filed: 12/28/00

For: **METHOD AND APPARATUS  
TO CONTROL ISOTOPIC FUEL  
LOADED WITHIN A MATERIAL**

This is a continuation of Serial no. 07/ 760,970

Filed: 09/17/1991

PAPER: 14

Group Art Unit: 3641

Examiner: Mr. Palabrica, R.J.

October 22, 2002

**Declaration of  
Dr. Mitchell R. Swartz**

I, Mitchell R. Swartz, declare that I am a citizen of the United States of America and the inventor of the invention described in the above-identified application.

1. I have earned the degree of Doctor of Science in Electrical Engineering from the Massachusetts Institute of Technology, as well as the degrees of Electrical Engineer, Master of Science, and Bachelor of Science from MIT, and a Doctorate of Medicine from Harvard Medical School. I have worked with radiation sources and nuclear materials, including those used in nuclear and radiation medicine, for more than fifteen years. I am the inventor of a number of United States patents [4,243,751, 4,139,348, 4,346,172, 4,181,128, 4,305,390, 4,402,318, and 4,681,839]. I have worked and published in this field for more than a decade.

2. I have studied Examiner's cited references, statements and arguments. Having fully reviewed the responses of the Examiner and having weighed the references as to matters of fact as discussed in detail below, I hereby respectfully submit that some statements and opinions of the Office appear to be in error. Based upon the facts, discussed in detail below and in "Applicant's Response To The Communication of 7/22/02", the present invention specified in the above-entitled Application is novel, is not obvious, and does have significant utility.

3. I respectfully dispute rejection of Claims 1-7, 10, and 13-16 rejected under 35 U.S.C. 102 (b), as being anticipated by Westfall, Claims 1-9 and 13-19 as being anticipated by Furuya, Claims 1-8, and 13-16 as being anticipated by Patterson, Claims 1-7 and 13-16 as being anticipated by Swartz ('92) or Swartz ('94), Claims 1, 2, 4, 5, 7, 10, 13, 15 and 16 rejected under 35 U.S.C. 102 (b) as being anticipated by Kinsella, Claims 10 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Furuya in view of either Lasche or Wooley, and Claims 1-10 and 12-19 rejected under 35 U.S.C. 112 and 35 U.S.C. 101 by the Examiner, based upon flawed reference to other art ("FP" or "F+P"),

4. Hydrogen storage and nuclear fusion are absolutely not new matter or new material because hydrogen loading and storage in palladium, and nuclear fusion, and other reactions were discussed in detail in the original specification, from which the present application is a Continuation.

5. The original specification and claims of the present invention taught and claimed a two-stage process involving hydrogen loading into a specialized metal electrode followed by internal flux (flow) within the metal, and an extraction system using a magnetic field with spatial inhomogeneity.

6. Furuya (US 5,215,631) is an invention for producing heat from loaded palladium using the simple technique of F+P modified by a surface layer. It works basically by a one stage loading and surface sealing method. It was filed after the present application of which the above identified invention is a continuation, as are most of the other Art to which the Examiner does refer. In Furuya, unlike the present invention, there is only a one stage system, and only a single rudimentary surface barrier of a single type. Furuya leads away from the present invention as it uses ceramic packing (7, see page 10, and figure 2), gas expansion film (6), and electrolyte vat (1, see also figure 1), copper jig (8) and water passage (9), and a barrier is formed "by an electrolytic plating method" (page 3) whereas in the present invention the barriers are engineered as part of the method and apparatus. Furuya also leads away from the present invention because Furuya's goal is "electrolysis" (page 4) whereas the present application used the Q1D equations of loading to minimize electrolysis as discussed in Swartz (92) to which the Examiner did refer. The apparatus described in Furuya has none of the features of the apparatus described in the present invention.

7. Lasche (US 4,735,762) is an invention for generating electric power using liquid lithium which is laser or charge particle beam driven using work against an applied magnetic field. It works basically by use of a magnetic field for producing electric energy directly from a nuclear fusion device. Lasche leads away from the present invention as it uses liquid lithium or compact blanket (22, see column 6, line 56), lithium beam tube (24, see column 6, line 59), liquid lithium configured into a sphere (32, see column 7, lines 15-18), two quarter-spheres which rotate into a column of liquid lithium (48, column 7, lines 33-36), sphere formed from two quarter-spheres which rotate into a column of liquid lithium (32, column 7, lines 33-36), tube of solid lithium (32, column 7, lines 43-46), suspension cables (43, column 10, lines 48-53), retractable expansion clamp (41, column 10, line 5-10), and the requisite housing (27) and clamping mechanism (37), etc., which are not needed in the present invention, as the described in the original specification and claims. This proves that the present invention has significant novelty and non-obviousness. Lasche (US 4,735,762) uses external MHD generators (58 in Figure 2, column 16 lines 36-59) and admits the reactions goes as  $v \times B$  (column 21, lines 28-33). Lasche does not have any of the features of the present invention.

8. Wooley (US 5,991,351) is an invention for generating electric power using hot liquid metal moving through a magnetic field generating magnetohydrodynamic power. It works basically by use of a magnetic field for producing electric energy directly from a nuclear fusion device. Wooley leads away from the present invention as it uses DT fueled thermocnuclear reactor (10, column 5, lines 18-22), a plurality of axissymmetric poloidal field electromagnetic coils (16, column 5, lines 25-28), thermonuclear DT plasma neutron source (18, column 6, lines 10-12), liquid metal blanket (20, column 6, lines 14-16), MHD pump duct (32, column 6, lines 24-25), MHD generator duct (70, column 8, lines 14-15), high-pressure mixer (46, column 6, lines 48-49), gas pump (52, column 6, lines 54-59), etc., which are not needed in the present invention, as the described in the original specification and claims. This proves that the present invention has significant novelty and non-obviousness. Wooley uses external MHD generators and admits the reactions goes as  $v \times B$  (column 8 lines 1-7). Wooley does not have any of the features of the present invention.

9. Unlike the Examiner's cited patents and art, the present invention involves a two-stage process involving hydrogen loading into a specialized metal electrode followed by internal flux (flow) within the metal, and an extraction system using a magnetic field with spatial inhomogeneity. Nowhere in Furuya, Wooley or Lasche, or in any combination of them or the other cited Art of the Examiner is there any aspect of the two-stage process involving hydrogen loading into a specialized metal electrode followed by internal flux and an extraction system using a magnetic field with spatial inhomogeneity.

10. In response to the Office communication, Applicant includes additional references consisting of articles taken from peer-reviewed journals. These references rebut the statements made by the Examiner [pursuant In re Grey, In re Oetiker], and are listed upon the accompanying Form PTO-1440. They were not relevant until the Examiner made statements which were incorrect, unfair, and must be corrected herein. The majority of the references precede the present application and show that the concepts objected to by the Office have been accepted in the scientific community through peer-review publications.

11. I have again submitted to the Examiner several peer-reviewed published papers which demonstrate enablement. These include Hagelstein, Swartz, MIT RLE Progress Report, 139: 1, 1-13 (1997); Swartz, *Fusion Technology*, 31, 228-236 (1997); ICCF-4, (1994); J.New Energy, 1,4,26 (1997); M.Swartz, 1992, "Quasi-One-Dimensional Model of Electrochemical Loading of Isotopic Fuel into a Metal", *Fusion Technology*, 22, 2, 296-300; Swartz, M., 1994, "Isotopic Fuel Loading Coupled To Reactions At An Electrode", *Fusion Technology*, 96, 4T, 74-77; "Codeposition Of Palladium And Deuterium", *Fusion Technology*, 32. 126-130 (1997); Swartz, 1994, "Generalized Isotopic Fuel Loading Equations", *"Cold Fusion Source Book"*, International Symposium On Cold Fusion And Advanced Energy Systems", Ed. H.Fox, Minsk, Belarus; Swartz, 1997, Swartz. M., "Generality of Optimal Operating Point Behavior in Low Energy Nuclear Systems", *Journal of New Energy*, 4, 2, 218-228 (1999), Swartz. M., Improved Electrolytic Reactor Performance Using  $\pi$ -Notch System Operation and Gold Anodes, Transactions of the American Nuclear Association, Nashville, Tenn 1998 Meeting, (ISSN:0003-018X publisher LaGrange, Ill) 78, 84-85); and Swartz. M., G. Verner, A. Frank, H. Fox "Importance of Non-dimensional Numbers and Optimal Operating Points in Cold Fusion", *Journal of New Energy*, 4, 2, 215-217 (1999); Swartz. M., 1997, "Consistency of the Biphasic Nature of Excess Enthalpy in Solid State Anomalous Phenomena with the Quasi-1-Dimensional Model of Isotope Loading into a Material", *Fusion Technology*, 31, 63-74, Swartz, 1997, "Phusons in Nuclear Reactions in Solids", *Fusion Technology*, 31, 228-236 (1997); Swartz, 1994, "Catastrophic Active Medium Hypothesis of Cold Fusion", 4, *"Proceedings: Fourth International Conference on Cold Fusion"* sponsored by EPRI and the Office of Naval Research; and Swartz, 1997, "Hydrogen Redistribution By Catastrophic Desorption In Select Transition Metals", *Journal of New Energy*, 1, 4, 26-33].

12. To rebut the Examiner, I have again submitted to the Examiner several Declarations and testimony by those skilled-in-the-art. The Declarations substantially and fully address all matters and issues criticized by the Examiner, and contain averments regarding evidence establishing the utility, validation, and operability of the Applicant's claimed subject matter. These include the Straus (4/22/94), Swartz, and other Declarations, including but not limited to the Amicus Curiae Briefs of Edmund Storms (2/21/01), Talbot Chubb (2/22/01), Eugene Mallove (3/24/00) and Hal Fox (2/21/01). Said Declarations are accompanied by statements supporting their introduction including full and explicit showing of good

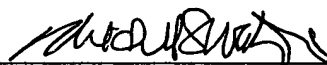
and sufficient reasons why they were not presented earlier (including that they are already in the preceeding file folder).

13. This invention is not just about cold fusion, but a two-stage process involving hydrogen loading into a specialized metal electrode followed by internal flux (flow) within the metal, and an extraction system using a magnetic field with spatial inhomogeneity. This diversity of use is consistent with the directive of the court [In re Swartz 00-1107 and In re Swartz 00-1108]. It is only by calling the present invention "cold fusion", instead of a novel two-stage process involving hydrogen loading and an extraction system using a magnetic field with spatial inhomogeneity, that the Examiner can purport that the heat measurement is "unattainable" and continue the Examiner's unfounded attack. If the Examiner must rely upon reference to art cut of a cloth other than this specification and claims, then his position must indeed be quite weak.

14. There is documented existence of these reactions and the preferred environment in which the present invention does operate. The number of papers in this field confirms both the "existence" and "utility" of these phenomena and any associated technologies.

I declare that all statements herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: October 22, 2002 Inventor



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